R - 15 **Code: 1525301**

KSRM COLLEGE OF ENGINEERING, (AUTONOMOUS) KADAPA

B.Tech III SEMESTER EXAMINATION, NOVEMBER 2018,

(COMPUTER SCIENCE ENGINEERING)

Paper: MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS

Time: Three Hours Maximum: 70 Marks

Answer FIVE questions, choosing ONE question from each Unit.

All questions carry equal marks.

UNIT – I

1. What is Managerial Economics? Explain its focus area?
   (14)M

(Or)

2. (a) Define the law of Demand. What are the types of elasticity of demand? Explain.
   (7)M
   (b) Explain about survey methods of demand forecasting?
   (7)M

UNIT – II

3. (a) What are ISO QUANT and ISO COST? Do they intersect each other?
   (7)M
   (b) Explain about law of returns to scale.
   (7)M

(Or)

4. Define Break Even Analysis. Explain with graphical presentation.
   (14)M

UNIT – III

5. How to determine the price under perfect competition market.
   (14)M

(Or)

6. (a) Define market. Explain any five methods of pricing based on strategy.
   (7)M
   (b) What are the features of monopoly?
   (7)M

UNIT – IV

7. (a) What are the sources of raising capital in different methods?

   (7)M

   (b) Distinguish between sole trader and partnership

   (7)M

(Or)

8. From the following information of two projects of each costing Rs.300000 each, rank the projects under the following methods if the company is about to yield 10% per annum.

   (14M)

   a) Average rate of return b) Net present value

   Cash flows after taxes plus depreciation

Year	1	2	3	4	5
Project-I	80,000	1,50,000	1,10,000	60,000	50,000
Project-II	1,50,000	1,10,000	80,000	50,000	40,000

UNIT – V

9. Journalize the following transactions in the books of SSK Ltd.

   (14)M

Date	Particulars	Amount
2015 Jan 1.	Business started with Capital of	20,000
,, 2.	Goods Purchased from Rao	5,000
,, 3.	Sold goods for cash	2,000
,, 4.	Sold goods to jyothi	3,000
,, 5.	Purchased goods for cash	1,500
,, 12.	Furniture bought for cash	2,000
,, 18.	Discount allowed	1,000
,, 20.	Cash received from jyothi on account	2,950
,, 24.	Cash paid to Rao	2,000
,, 28.	Salary paid	1,500

,, 31.	Rent paid to landlord	500

(Or)

10. What are the important ratios? Explain any five of them with examples to understand financial statement.

(14)M

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Model Question Paper

(1505302)ADVANCED DATA STRUCTURES

B.Tech. III Semester (CSE) (R15) Degree Examinations

Time: 3 Hrs **Max.Marks:70**

Note: Answer any **FIVE** questions by choosing one from unit.
All questions carry equal marks.

UNIT-I

1. What is Stack? Write and explain the algorithms of Push and Pop operations. (14M)

(OR)

2. Explain about the following
   a) Towers of Hanoi (7M)
   b) Circular Queue (7M)

UNIT-II

3. a) Define Binary Tree and write the properties of Binary Tree. (7M)
   b) Give the iterative algorithm for the inorder traversal of a Binary Tree. (7M)

(OR)

4. What is Heap? Explain about Heap sort algorithm with suitable example. (14M)

UNIT-III

5. a) Construct a Binary Tree with the following inorder and postorder traversals. (5M)
   Inorder: ABDECF Postorder: DEBFCA
   b) What is BST? Explain insertion and deletion operations of BST with examples. (9M)

(OR)

6. a) Briefly explain about Depth First Search (DFS) with suitable example. (10M)
   b) Write short notes on Splay Trees. (4M)

UNIT-IV

7. Write short notes about the following.
   a) Dictionaries (7M)
   b) Skip Lists (7M)

(OR)

8. a) Explain about various Hash functions with suitable example. (8M)
   b) Define collision and explain about separate chaining with example. (6M)

UNIT-V

9. What is B tree? Explain about various operations of B tree with examples. (14M)

(OR)

10) a) Write short notes on Hash table. (7M)
    b) Compare B trees with B+ trees. (7M)

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Model Question Paper
(1505303) DIGITAL LOGIC DESIGN
B.Tech. III Semester (CSE) (R15) Degree Examinations

Time: 3 Hrs **Max.Marks:70**

Note: Answer any FIVE questions by choosing one from unit.
All questions carry equal marks.

UNIT-I

1. a) Convert the following numbers into binary and octal numbers. (7M)
   i) $(1675.15)_{10}$ ii) $(A91B.F3)_{16}$
   b) solve the following problems using 2's complement. (7M)
   (i) $(10111)_2 - (10101)_2$
   (ii) $(101)_2 - (110)_2$

(OR)

2. a) Define Dual and discuss DeMorgan theorem. (7M)
   b) Express the following function in sum of minterms and product of maxterms. (7M)
   $F(A,B,C,D) = B^1D + A^1D + BD$

UNIT-II

3. Simplify the following Boolean expressions and implement them with two levels NAND gate circuit. (14M)
   $F(A,B,C,D,E) = \sum m(0,2,4,6,9,13,21,23,25,29,31)$

(OR)

4 a) Explain in detail about Exclusive-OR Functions. (7M)
   b) Simplify the following Boolean expression using Quine-McCluskey method. (7M)
   $F(A,B,C,D) = \sum m(0,5,7,8,9,10,11,14,15)$

UNIT-III

5 a) Draw and explain the function of half-adder and full adder with suitable diagrams. (7M)
   b. Explain in detail about Multiplexer. (7M)

(OR)

6. a) Explain in detail about BCD adder. (7M)
   b) Explain in detail about PLA. (7M)

UNIT-IV

7. a) Draw the circuit of a D flips flop and explain its working with the help of its truth table. (7M)
   b) Describe mealy and Moore models with help of circuit diagrams. (7M)

(OR)

8. Explain the following terms with suitable example
   (i) State table (6M)
   (ii) State diagram (4M)
   (iii)State assignment (4M)

UNIT-V

9. a) Design 4 bit register with parallel load. (7M)
   b) Explain the differences between asynchronous and synchronous sequential circuits. (7M)

(OR)

10. a) Design and discuss Johnson counter. (7M)
    b) Explain in detail about Hazards. (7M)

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Model Question Paper

(1505304) DISCRETE MATHEMATICS

B.Tech. III Semester (CSE) (R15) Degree Examinations

Time: 3Hours **Max.Marks:70**

Note:- Answer any **FIVE** questions choosing **ONE** question from each unit.
All questions carry **Equal** marks.

UNIT – I

1. a) Define Tautology and Contradiction? (4M)
   b) Show that $P\rightarrow (Q\rightarrow R) \Leftrightarrow P\rightarrow (\sim Q \vee R) \Leftrightarrow (P\wedge Q)\rightarrow R$. (5M)
   c) Define a Principal Disjunctive Normal Form. Obtain the Principal Disjunctive Normal Form of $(P\wedge Q)\vee(\sim P\wedge R)\vee(Q\wedge R)$ (5M)

(OR)

2. a) What is a well formed formula? Give examples of well formed formula. (5M)
   b) Define conditional and bi-conditional? (4M).
   c) Define a Principal Conjunctive Normal Form. Obtain the Principal Conjunctive Normal Form of $(\sim P\rightarrow R)\wedge(Q\leftrightarrow R)$ (5M)

UNIT-II

3. a) What is a binary relation? Explain the properties of binary relation? (7M)
   b) Let the functions *f* and *g* be defined as $f(x) = 2x+1$ and $g(x) = x^2-2$. Determine the composition of functions *fog* and *gof*. (7M)

(OR)

4. a) Define a partially ordered set .Draw the Hasse diagram (X, ≤) where X is the set of positive divisors of 45 and the relation ≤ be such that $x\leq y$ if x divides y. (6M)
   b) Define Equivalence Relation. Let I denote the set of all positive integers. For $x\in I$ and $y\in I$ define R as R= {(x,y) / x-y is divisible by 3}. (8M)

UNIT-III

5. a) Define semi group and monoid. Explain them with examples. (7M)
   b) Define a group and sub group. Explain them with examples. (7M)

(OR)

6. a) Define algebraic system. When do you call an algebraic system is a monoid? Give an example. (7M)
   b) Explain about the homomorphism and isomorphism with respect to groups. (7M)

UNIT-IV

7. a) Explain Inclusion-Exclusion principle? (7M)
   b) Determine the coefficient of x^5 in $(a+bx+cx^2)^{10}$. (7M)

(OR)

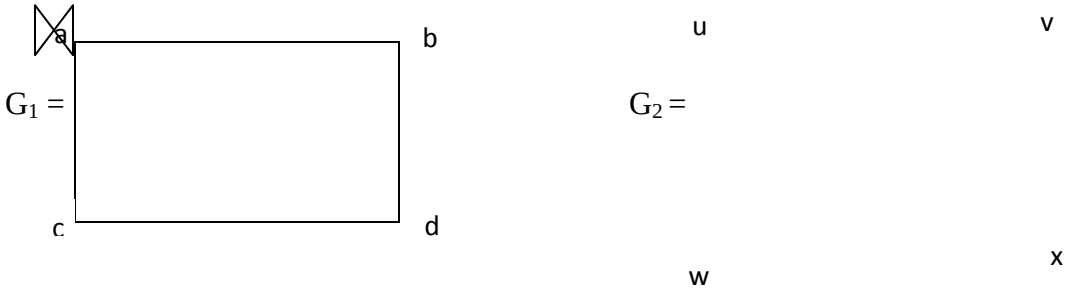
8. a) Describe basics of counting? (7M)
   b) How many 5-letter words are there where the first and last letters: (7M)
      i) are consonants
      ii) are vowels.

UNIT-V

9. a) Define chromatic number of a graph. Illustrate with an example. (7M)
   b) Define terms planar graphs, sub graphs and multi graphs. Explain them with examples. (7M)

(OR)

10. a) Show that the following graphs G_1 and G_2 are isomorphic. (7M)



   b) What is a spanning tree? Illustrate with an example. (7M)

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Model Question Paper

(1505306) OBJECT ORIENTED PROGRAMMING THROUGH C++

B.Tech. III Semester (CSE) (R15) Degree Examinations

Time: 3 Hrs **Max. Marks: 70**

Note: Answer any **FIVE** questions choosing **ONE** question from each unit.

All questions carry **Equal** marks.

UNIT-I

1. a) Explain in detail about the basic concepts of Object Oriented Programming. (10M)
   b) List a few domain application of OOP technology. (4M)

(OR)

2. a) Explain in detail about input and output operators in C++. (7M)
   b) Explain in detail about structure of a C ++ program. (7M)

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UNIT- II

3. a) What is the use of Manipulators in C++? Give some Pre-define manipulators. (7M)
   b) Explain about scope resolution operator with suitable example? (7M)

(OR)

4. a) How to pass the variables from one function to another function? Give illustrations. (7M)
   b) Explain the concept of function overload with suitable example. (7M)

UNIT- III

5. a) Write a C++ Program to demonstrate the usage of static data member and static member function? (7M)
   b) Explain the concept of friend function. (7M)

OR

6. What is constructor? Explain different types of constructors. (14M)

UNIT- IV

7. a) Give the rules for operator overloading. Discuss an example. (7M)
   b) How to overload the binary operators. Explain. (7M)

(OR)

8. What is Inheritance? Explain different types of Inheritances with suitable example. (14M)

UNIT- V

9. a) Define virtual function? Illustrate with a C++ Program? (7M)
   b) Discuss about formatted console I/O and unformatted console I/O. (7M)

(OR)

10. a) Discuss about Member Function Template. (7M)
    b) What is an exception? List the principles of exception handling. With a suitable program explain exception handling mechanism of C++. (7M)

K.S.R.M. COLLEGE OF ENGINEERING (Autonomous), KADAPA.

Model Question paper

B.Tech III Sem (R15)

Mathematics – IV

(Common to EEE & ECE Branches)

Time: 3 Hrs. **Max Marks : 70**

Note : Answer any **FIVE** questions by choosing one from each unit.
All questions carry equal marks.

UNIT - I

1 Show that $\beta(m,n) = \frac{\Gamma(m)\Gamma(n)}{\Gamma(m+n)}$. (14M)

(OR)

2 a) Show that $\beta(m,n) = \int_0^1 \frac{x^{m-1}+x^{n-1}}{(1+x)^{m+n}}\,dx$ (7M)

b) Show that $\int_0^1 y^{n-1}\left(\log\frac{1}{y}\right)^{m-1}\,dy = \frac{\Gamma(m)}{n^m}$, where $m>0, n>0$ (7M)

UNIT – II

3 Prove that (i) $J_n(x) = \frac{x}{2n}\,[J_{n-1}(x) + J_{n+1}(x)]$ (7M)

(ii) $J_n^1(x) = \frac{n}{x}J_n(x) - J_{n+1}(x)$ (7M)

(OR)

4 State and prove Rodrigue's formula. (14M)

UNIT – III

5 Prove that the function $f(z)$ defined by $f(z) = \frac{x^3(1+i)-y^3(1-i)}{x^2+y^2}$, $z \neq 0$ and $f(0) = 0$ is continuous and Cauchy – Riemann equations are satisfied at the origin, yet $f'(0)$ does not exist.

(OR)

6 Determine the analytic function $f(z) = u + iv$, if $u - v = \frac{\cos x+\sin x-e^{-y}}{2(\cos x-\cos hy)}$ and $f\left(\frac{\pi}{2}\right) = 0$. (14M)

UNIT – IV

7 a) Evaluate $\int_c \frac{z^2-z+1}{z-1}\,dz$, where 'c' is the circle $|z| = 2$ (7M)

b) Evaluate $\oint_c \frac{e^z}{(z^2+\pi^2)^2}\,dz$, where 'c' is the circle $|z| = 4$ (7M)

(OR)

8 Find the bilinear transformation which maps the points z=1,I,-1 onto the points w=I,0,-i. Hence find the invariant points of this transformation. (14M)

UNIT – V

9. a) State and prove Cauchy's residue theorem (7M)

b) Evaluate $\oint_c \tan z\,dz$ where 'c' is the circle $|z| = 2$ (7M)

(OR)

10. Show that $\int_0^{2\pi} \frac{\cos 2\theta\,d\theta}{1-2a\cos\theta+a^2} = \frac{2\pi a^2}{1-a^2}$, $a^2 < 1$ (14M)

Subject Code: 1521302

K S R M College of Engineering (Autonomous), KADAPA – 516 003
B.Tech 3rd Semester Supple Examinations, 2019 – Model Paper
PROBABILITY & STATISTICS
(Civil Engineering)

Time: 03:00 Hrs. **Max. Marks: 70**

Note: Answer any **FIVE** questions by choosing **ONE** from each unit.
All questions carry equal marks.

Unit-I

1. A random variable X has the following probability function

X=x	0	1	2	3	4	5	6	7
P(X=x)	0	k	2k	2k	3k	k^2	$2k^2$	$7k^2+k$

Determine (i) k (ii) P(X < 6) (iii) P(X≥ 6) (iv) P(0$< X < 5$) (v)If P(X$\leq k$) $> \frac{1}{2}$, find the minimum of k (vi) mean (vii) variance. (14M)

(OR)

2. (a) If X is a continuous random variable and k is a constant then prove that var (X+k) = var (X). (7M)

(b) Probability density function of a random variable X is

$$f(x) = \begin{cases} \frac{1}{2}sinx, for\ 0 \leq x \leq \pi \\ 0, otherwise \end{cases}$$

. Find the mean and median of the distribution. (7M)

Unit-II

3. (a) The probability that a pen manufactured by a company will be defective is 0.1. If 12 such pens are manufactured, find the probability that (i) exactly two will be defective (ii) at least two will be defective and (iii) none will be defective. (7M)

(b) Fit a Poisson distribution for the following distribution: (7M)

x	0	1	2	3	4
f	122	60	15	2	1

(OR)

4. (a) 4 buses arrive at a specified stop at 15 minute intervals starting at 7 a.m. That is, they arrive at 7.00,7.15,7.30,7.45 a.m. and so on. If a passenger arrives at the stop at a time that is uniformly distributed between 7.00 and 7.30 a.m., find the probability that he waits (i) less than 5 minutes for a bus (ii) more than 10 minutes for a bus. (7M)

(b) In a normal distribution, 31% of the items are under 45 and 8% are over 64. Find the mean and standard deviation of the distribution. (7M)

Unit-III

5. (a) The mean breaking strength of the cables supplied by a manufacturer is 1800 with a S.D of 100. By a new technique in the manufacturing process, it is claimed that the breaking strength of the cables have increased. In order to test this claim, a sample of 50 cables is tested. It is found that the mean breaking strength is 1850.Can we support that the claim at 1% level of significance. (7M)

(b) Random samples of 400 men and 600 women were asked whether they would like to have a fly over near their residence. 200 men and 325 women were in favour of the proposal. Test the hypothesis that proportions of men and women in favour of the proposal are same at 5% level. (7M)

(OR)

6. (a) Two random samples drawn from two normal populations are given below:

x	19	17	26	28	22	23	19	24	26			
y	28	32	40	37	30	35	40	28	41	45	30	36

Obtain the estimates of variance of the population and test whether the two populations have the same variance. (7M)

(b) A sample analysis of examination results of 500 students was made. It was found that 220 students had failed, 170 had secured a third class,90 were placed in second class and 20 got a first class. Do these figures commensurate with the general examination results which are in the ratio of 4:3:2:1 for the various categories respectively. (7M)

Unit-IV

7. (a) Psychological tests of intelligence and of engineering ability were applied to 10 students. Here is a record of ungrouped data showing intelligence ratio (I.R) and engineering ratio (E.R).Calculate the coefficient of correlation. (7M)

Student	A	B	C	D	E	F	G	H	I	J
I.R	105	104	102	101	100	99	98	96	93	92
E.R	101	103	100	98	95	96	104	92	97	94

(b) Find the rank correlation for the following data. (7M)

Scores in test x	12	15	24	20	8	15	20	20	11	26
Scores in test y	21	25	35	24	16	18	25	16	16	38

(OR)

8. Find the regression lines of y on x and x on y for the following data. (14M)

x	2	4	6	8	10
y	5	7	9	8	11

Unit-V

9. Each telephone call is considering a product and the time to answer the call indicates the quality of service. Five calls chosen at random and times recorded at a busy hour. Results for the last 10 hours shown below (in seconds).

Sample No	1	2	3	4	5	6	7	8	9	10
Mean	20	34	45	39	26	29	13	34	37	23
Range	13	9	15	5	20	17	21	11	10	10

Construct $\bar{X}$ and R charts and determine whether the product is under control. (14M)

(OR)

10. (a) An inspection of 10 samples of size 400 each from 10 lots revealed the following defective units.

Sample no	1	2	3	4	5	6	7	8	9	10
No of defective units	17	15	14	26	9	4	19	12	9	15

Calculate the control limits for the number of defective units. Plot the control limits and the observations and state whether the process is under control or not. (7M)

(b) 15 tape-recorders were examined for quality control test. The number of defects in each tape-recorder is recorded below. Draw the appropriate control chart and comment on the state of control. (7M)

UnitNo .	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
No.of defects	2	4	3	1	1	2	5	3	6	7	3	1	4	2	1